

What is claimed is:

1. A system for improving the adhesion between thermoplastic polyolefin elements and a surface coating, comprising:

an adhesion promoter;

a device for mixing an amount of said adhesion promoter and de-ionized water to form a mixture;

a storage device for receiving and storing a supply of said mixture;

an enclosure for providing a protected environment for applying said mixture to said thermoplastic polyolefin elements;

a cleaning device for removing contaminants from said thermoplastic polyolefin elements prior to application of said mixture;

an adhesion promoter application device within said enclosure for applying said mixture to said thermoplastic polyolefin elements;

a pump for supplying said mixture to said application device;

an atmosphere controller for regulating the atmosphere within said enclosure;

a drying device for drying said mixture after application to said thermoplastic polyolefin elements; and

a transport device for passing said thermoplastic polyolefin elements through said system.

2. The system of claim 1, wherein said adhesion promoter consists essentially of :

a grafted polypropylene chloride;
an amine-neutralized water-soluble resin; and
a wettability-improving agent.

3. The system of claim 1, wherein said application device has at least one nozzle for directing a supply of said mixture onto said thermoplastic polyolefin elements.

4. The system of claim 3, wherein the flow rate of said mixture through said at least one nozzle can be regulated.

5. The system of claim 1, wherein said application device has a supply device, located within said enclosure, for holding a supply of said mixture.

6. The system of claim 5, wherein at least one nozzle is mounted to said supply device and is in communication with said mixture located therein for directing a supply of said mixture onto said thermoplastic polyolefin elements.

7. The system of claim 6, wherein the flow rate of said mixture through said at least one nozzle can be regulated.

8. The system of claim 1, further comprising a tank for receiving an amount of said mixture from said storage device and transferring at least a portion thereof to said supply device.

9. The system of claim 8, wherein said mixture is transferred from said tank to said supply device via gravity.
10. The system of claim 1, further comprising a heat exchanger for adjusting the temperature of said mixture prior to its application to said thermoplastic polyolefin elements.
11. The system of claim 1, further comprising a re-circulation pump for re-circulating the mixture through said storage device.
12. The system of claim 11, wherein said mixture is re-circulated through a filter.
13. The system of claim 1, further comprising a filter between said storage device and said heat exchanger.
14. The system of claim 1, wherein said enclosure also houses said cleaning device, said cleaning device occurring prior to said application device with respect to the path of travel of said thermoplastic polyolefin elements.
15. The system of claim 14, further comprising at least a partial seal for separating said enclosure portion housing said cleaning device from said enclosure portion housing said adhesion promoter application device.
16. The system of claim 15, wherein said at least a partial seal is an air seal.
17. The system of claim 1, wherein said drying device is connected to said enclosure.
18. The system of claim 17, further comprising at least a partial seal for separating said enclosure portion housing said adhesion promoter application device from said drying device.

19. The system of claim 18, wherein said at least a partial seal is an air seal.
20. The system of claim 1, wherein the amount of said adhesion promoter mixed with said de-ionized water is regulated by a metering device.
21. The system of claim 20, wherein a surface tension meter is adapted to analyze a wet sample of said mixture, said surface tension meter further adapted to communicate with said metering device for providing regulation of the amount of said adhesion promoter added to said de-ionized water based on said analysis.
22. The system of claim 1, further comprising a chiller for supplying chilled water to said atmosphere controller and said heat exchanger.
23. The system of claim 1, further comprising a boiler for supplying heated water to said atmosphere controller and said heat exchanger.
24. An adhesion promoter application system, comprising:
 - a device for creating a mixture of an adhesion promoter and de-ionized water;
 - an enclosure for providing a protected environment during application of said mixture to thermoplastic polyolefin elements located therein;
 - an adhesion promoter application device within said enclosure for applying said mixture to said thermoplastic polyolefin elements;
 - a pump for supplying said mixture to said application device; and
 - an atmosphere controller for regulating the atmosphere within said enclosure.

25. The application system of claim 24, further comprising a storage device for receiving and storing a supply of said mixture.
26. The application system of claim 25, further comprising a re-circulation pump for re-circulating said mixture through said storage device.
27. The application system of claim 26, wherein said mixture is re-circulated through a filter.
28. The application system of claim 24, further comprising a tank for receiving an amount of said mixture from said storage device.
29. The application system of claim 24, further comprising a cleaning device for removing contaminants from said thermoplastic polyolefin elements prior to application of said mixture.
30. The application system of claim 29, wherein said enclosure also houses said cleaning device, said cleaning device occurring prior to said application device with respect to a path of travel of said thermoplastic polyolefin elements.
31. The system of claim 30, further comprising at least a partial seal for separating the portion of said enclosure housing said cleaning device from the portion of said enclosure housing said adhesion promoter application device.
32. The system of claim 31, wherein said at least a partial seal is an air seal.
33. The application system of claim 24, further comprising a drying device for drying said mixture after application to said thermoplastic polyolefin elements.
34. The application system of claim 33, wherein said drying device is connected to said enclosure.

35. The application system of claim 34, further comprising at least a partial seal for separating the portion of said enclosure housing said adhesion promoter application device from said drying device.
36. The application system of claim 35, wherein said at least a partial seal is an air seal.
37. The application system of claim 24, further comprising a transport device for passing said thermoplastic polyolefin elements through said mixture delivered by said application device.
38. The application system of claim 24, wherein said application device comprises at least one nozzle for directing a supply of said mixture onto said thermoplastic polyolefin elements.
39. The application system of claim 38, wherein the flow rate of said mixture through said at least one nozzle can be regulated.
40. The application system of claim 24, wherein said application device has a supply device, located within said enclosure, for holding a supply of said mixture.
41. The application system of claim 40, wherein said mixture is transferred from a holding tank to said supply device via gravity.
42. The application system of claim 40, wherein at least one nozzle is mounted to said supply device and is in communication with said mixture located therein for directing a supply of said mixture onto said thermoplastic polyolefin elements.
43. The application system of claim 42, wherein the flow rate of said mixture through said at least one nozzle can be regulated.

44. The application system of claim 24, further comprising a heat exchanger for adjusting the temperature of said mixture prior to its application to said thermoplastic polyolefin elements.
45. The application system of claim 44, further comprising a filter for removing contaminants from said mixture prior to entrance into said heat exchanger.
46. The system of claim 44, further comprising a chiller for supplying chilled water to said heat exchanger.
47. The system of claim 44, further comprising a boiler for supplying heated water to said heat exchanger.
48. The application system of claim 24, wherein the amount of said adhesion promoter mixed with said de-ionized water is regulated by a metering device.
49. The application system of claim 48, wherein a surface tension meter is adapted to analyze a wet sample of said mixture, said surface tension meter further adapted to communicate with said metering device for providing regulation of the amount of said adhesion promoter added to said de-ionized water based on said analysis.
50. The system of claim 24, further comprising a chiller for supplying chilled water to said atmosphere controller.
51. The system of claim 24, further comprising a boiler for supplying heated water to said atmosphere controller.